Commonwealth of Virginia

2011 Statewide Communication Interoperability Plan

Office of the Governor

COMMONWEALTH of VIRGINIA

Terrie L. Suit
Secretary of Veterans Affairs
and Homeland Security

March 1, 2011

Greetings,

I am pleased to provide to you the 2011 Commonwealth of Virginia Statewide Communication Interoperability Plan (SCIP). This is the seventh version of the SCIP and it represents the Commonwealth's continued commitment to the public safety practitioner community and marks the next step towards achieving the 2015 Vision of a system of systems on a local, regional, state, and federal level.

The Office of Veterans Affairs and Homeland Security (OVAHS) and the State Interoperability Executive Committee (SIEC) collaborated to refine and enhance the SCIP in compliance with Virginia Code Section 9.1-1200. This code requires the annual update and implementation of the SCIP, and as a result of the updates for 2011, you will find both new and ongoing interoperability initiatives.

In 2010, the SIEC and additional local, regional, and state practitioners represented the public safety community, drove the planning process, and played an integral role in the implementation of the initiatives contained in the SCIP. In 2011, we will continue to work with public safety organizations and state agencies to increase awareness, and address interoperability challenges across disciplines, localities, and all levels of government.

As we move toward the July 1, 2015 deadline for interoperability, we must remain dedicated and continue to improve our ability to communicate between disciplines and across jurisdictional boundaries. With help from public safety practitioners statewide, we will work to achieve our 2015 Vision and continue to be a model for statewide interoperability.

Sincerely,

Terrie Suit
Secretary of Veterans Affairs and Homeland Security

TABLE OF CONTENTS

List of Figures

List of Appendices

1. Introduction

INTEROPERABILITY

What is interoperability? According to the Department of Homeland Security (DHS), interoperability is the ability of public safety agencies to talk across disciplines and jurisdictions via radio communications systems, exchanging voice and/or data with one another on demand in real time, when needed, and as authorized.[1]

The lack of interoperable communications is not a new public safety problem, but new events continue to remind us of the pressing problem it poses to public safety departments and emergency response agencies. Major events, like September 11, 2001, and Hurricane Katrina in 2005, as well as ongoing day-to-day operations, demonstrate the need for improved communications systems and collaboration and planning among various jurisdictions.

COMMONWEALTH INTEROPERABILITY COORDINATOR

In December 2003, the Commonwealth of Virginia formally created a full-time, state-funded position for a Commonwealth Interoperability Coordinator (CIC) to work toward improving statewide interoperability and communication.

The Office of Veterans Affairs and Homeland Security (OVAHS) appointed Chris McIntosh as the Statewide Interoperability Coordinator (SWIC) in November 2010.

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[1] Virginia adopted and utilizes the Department of Homeland Security's definition of interoperability. For more information on Virginia's interoperability efforts, visit http://www.interoperability.virginia.gov/.

PRELIMINARY STEPS TOWARD INTEROPERABILITY

SAFECOM

The Commonwealth of Virginia and SAFECOM, a Federal program managed by DHS, entered into a Memorandum of Understanding (MOU) in 2004 to develop the first state-level strategic plan addressing interoperable communications. This strategic plan was called the FY 2005 Strategic Plan for Statewide Interoperable Communications, and is now more commonly known as the Statewide Communications Interoperability Plan (SCIP). Virginia was the first state in the country to create a statewide plan addressing communications interoperability, leading the way in what would eventually become a federally mandated requirement for each state to create and annually update its SCIP.

SAFECOM works with its federal partners to provide research, development, testing and evaluation, guidance, tools, and templates on communications-related issues to local, tribal, state, and Federal public safety agencies. Through this partnership, the Commonwealth adopted the SAFECOM practitioner-driven approach to provide a forum for emergency responders to drive statewide planning.

THE INTEROPERABILITY CONTINUUM

DHS created the *Interoperability Continuum* as a tool for improving emergency response communications and interoperability, and the Commonwealth uses this tool to measure the progress it makes toward interoperability.[2] The following information has been pulled from the DHS brochure about the *Continuum*:

> *Interoperability is a multi-dimensional challenge. To gain a true picture of interoperability, progress in each of the five interdependent elements must be considered. For example, when a region procures new equipment, that region should plan and conduct training and exercises to make the best use of that equipment.*
>
> *Optimal interoperability is contingent on an agency's and jurisdiction's needs. The Continuum is designed as a guide for jurisdictions that are pursuing a new interoperability solution, based on changing needs or additional resources.*

The Commonwealth's SCIP includes both yearly and ongoing initiatives (described in detail in Section 4) that align with the following "lanes" of the *Interoperability Continuum*, described below. (See Figure 1, SAFECOM *Interoperability Continuum*).

[2] The *Interoperability Continuum* brochure is available at: http://www.safecomprogram.gov/NR/rdonlyres/54F0C2DE-FA70-48DD-A56E-3A72A8F35066/0/Interoperability_Continuum_Brochure_2.pdf

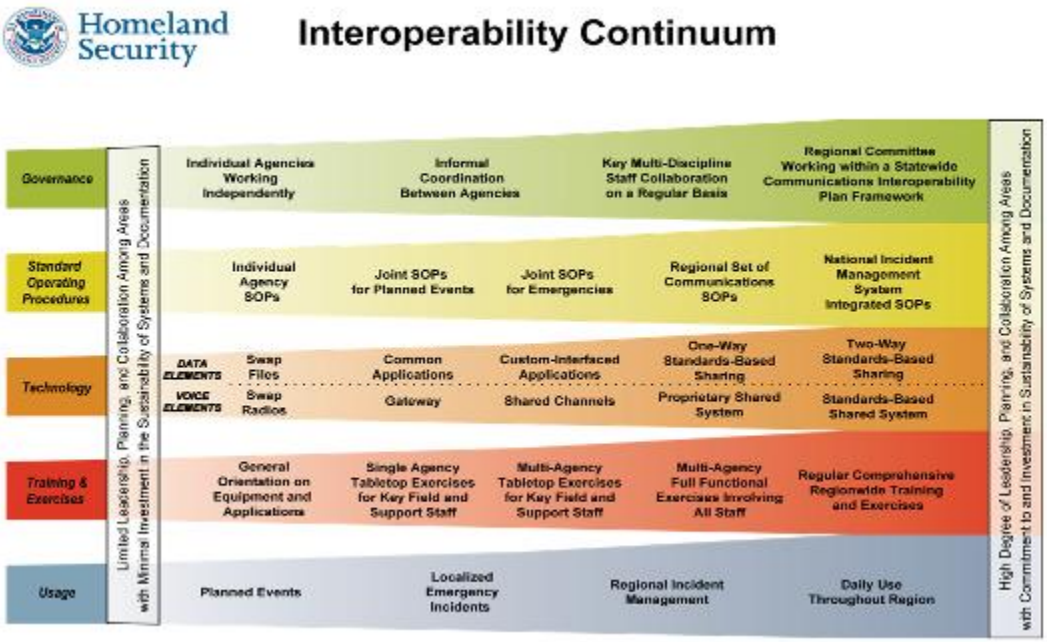

Figure 1: SAFECOM Interoperability Continuum

Governance

Governance efforts enhance, foster, and maintain the interoperability effort in the Commonwealth of Virginia by involving an ever-increasing number of stakeholders in the planning and implementation process. Initiatives and tasks are focused on creating a collaborative and inclusive practitioner-driven process for interoperability decision-making.

Technology

Technology initiatives and tasks focus on coordinating major statewide investments and assets, increasing the ability of stakeholders to respond to major emergencies by establishing clear technical requirements, identifying technological gaps on a regional and state basis, and establishing a funding strategy.

Standard Operating Procedures

Operational protocols are developed to help overcome operational and cultural barriers and improve stakeholder-to-stakeholder communications for day-to-day as well as during emergency situations. Additionally, operational requirements are considered for all technology purchases and, whenever possible, initiatives and tasks are focused on forecasting future needs to ensure operational procedures are established prior to purchase.

Training & Exercises

Training and exercises are necessary to provide a standardized definition of interoperability, test existing equipment, and help localities obtain additional grant funds through improved grant writing. By leveraging the training plans throughout the state, the initiatives and tasks are focused on making interoperability a key part of statewide exercises.

Usage

Training, exercises, and outreach will all be leveraged to use interoperability equipment regularly, whenever possible. Initiatives and tasks are focused on continued communication with practitioners, especially those that have received funding from the state and must now consider its most effective usage. Outreach efforts bring interoperability information to Virginia's public safety community, elected officials, and other stakeholders (such as private and non-profit partners).

STATEWIDE COORDINATION

To ensure interoperability planning and data collection efforts are coordinated with other important entities in the Commonwealth, the Office of Veterans Affairs and Homeland Security works closely with:

- The Virginia State Police (VSP)
- The Virginia Department of Emergency Management (VDEM)
- The Virginia Geographic Information Network (VGIN) and the Public Safety Communications (PSC) agency, sub-agencies of the Virginia Information Technologies Agency (VITA) Integrated Service Program (ISP)

2. Virginia's Interoperability Achievements

PAST ACHIEVEMENTS

Through the years, Virginia has been a leader in interoperable communications. Highlighted below are several of the Commonwealth's past achievements:

- In 1978, Virginia established the State Interdepartmental Radio System (SIRS) to ensure that law enforcement agencies could communicate across the state, not just within their individual jurisdictions, and could do so armed with the equipment and frequencies needed to establish connections between localities and the Virginia State Police (VSP). In 2004, the VSP also developed the Statewide Agencies Radio System (STARS), which interfaces with localities and provides communications to a total of 21 state agencies throughout Virginia.

- In 2003, Virginia made strides in improving coordination for communications interoperability by establishing a full-time Commonwealth Interoperability Coordinator.

- Since 2004, the OVAHS distributed more than $44 million to support local interoperable communication projects and assisted localities and regions through federal interoperable communication grants.

- In 2004, the First Responder Sub-Panel, chaired by Senator Stolle of Governor Warner's Secure Commonwealth Panel (SCP), identified radio communications interoperability as a critical post-9/11 priority for Virginia's first responders. In response to this directive, the SCP formed the Interoperability Working Group, which was composed of first responder participants from fire, rescue, and law enforcement agencies throughout the Commonwealth to plan for improved communications interoperability statewide.

- In 2004, Virginia developed the country's first Statewide Communication Interoperability Plan (SCIP), called the *Strategic Plan for Statewide Interoperable Communications*, or the Statewide Plan. In 2007, DHS mandated that any state requesting Federal interoperability grant funding must have a current SCIP. Based on lessons learned from the Virginia planning process, SAFECOM released the *Statewide Communication Interoperability Planning (SCIP) Methodology* to help states better understand how to integrate practitioner input into a successful statewide strategic plan.

- Since 2004, the Office of Veterans Affairs and Homeland Security has developed, implemented, and updated five statewide plans (FY 2005, FY 2006, FY 2007, FY 2008, and FY 2009[2]) to increase the availability of interoperable communications information, further establish governance,

[2] Past Statewide Plans can be found on the *Interoperability in Virginia* Web site at: http://www.interoperability.virginia.gov/StrategicPlans/PlanArchives.cfm.

create standard operating procedures, coordinate state interoperability projects, and improve the technological capabilities of Virginia's stakeholders.

- In 2007, the OVAHS established three Strategic Communications Caches and contracted with the Sprint Emergency Response Team to provide supplemental and back-up communications statewide.

- Through the development of the FY 2005 Statewide Plan, Virginia established a practitioner-based governance structure consisting of the Commonwealth Interoperability Coordinator's Office (CICO)[3], the State Interoperability Executive Committee (SIEC), and Initiative Action Teams (IATs). The SIEC plays a major role in the update and review of the Virginia SCIP, and makes grant funding recommendations to the Governor.

- In 2008, Virginia added additional committees and subcommittees to its governance structure to ensure efficiency and participation from public safety stakeholders of all levels and disciplines. The Commonwealth added three standing subcommittees under the SIEC — Operations, Policy, and Technical — to explore relevant stakeholder issues in each of those areas, and established seven Regional Preparedness Advisory Committees for Interoperability (RPAC-Is), based on the previously created Regional Preparedness Advisory Committees (RPACs) across the Commonwealth. These seven interoperability subcommittees work to improve regional interoperability and provide the SIEC with recommendations on future statewide interoperability planning. Virginia is one of the first states to approach interoperability planning from a regional perspective, further aligning with DHS' recommended approach.

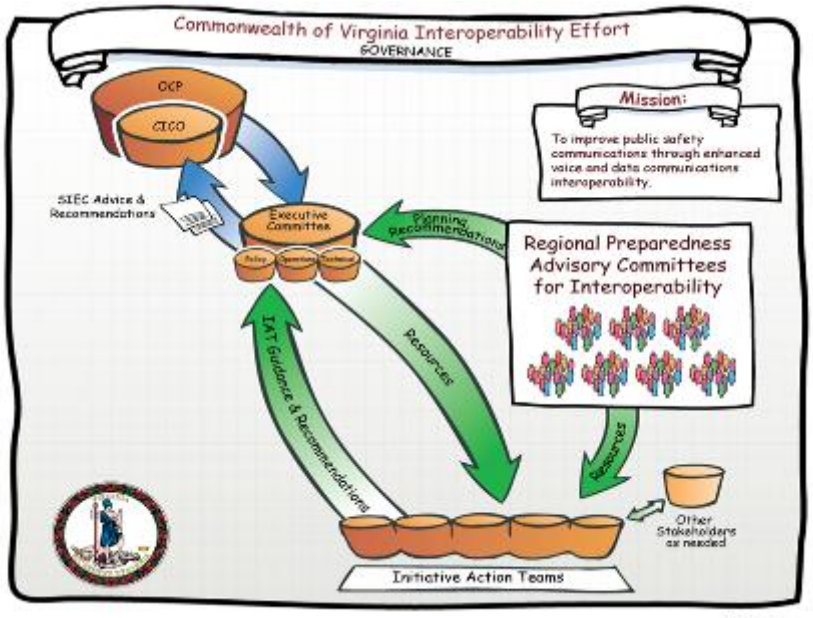

Figure 2: Initial Virginia Interoperability Governance Structure

[3] The Commonwealth Interoperability Coordinator's Office (CICO) is now referred to as the Office of Veterans Affairs and Homeland Security.

- The 2008 legislative session codified the Commonwealth's SIEC in the Virginia Code, further cementing its role in improving communications interoperability (HB 839).

- The OVAHS partnered with state agencies and organizations from the Mid-Atlantic All Hazards Consortium Interoperability Working Group on long-term regional efforts to improve and coordinate interoperable communications. Through the OVAHS, the Commonwealth hosted the 2008 All Hazards Consortium Interoperability Working Group retreat in Winchester, VA, where the group discussed long-term priorities to conduct a baseline study concerning interoperable communications for the states of Delaware, Maryland, North Carolina, New Jersey, New York, Pennsylvania, Virginia, West Virginia, and the District of Columbia.

- In 2009, the OVAHS established the Grants Working Group (GWG) to assist the office in coordinating the allocation of the SHSGP funding and to ensure a fair and explicit grant evaluation process. The GWG evaluates grant submissions and provides funding recommendations to the SIEC and the OVAHS for consideration prior to the Governor's final decision. Each of the seven interoperability regions and the three SIEC Subcommittees (which, at the time included Operations, Policy, and Technical) were represented in the group.

- In 2009, the OVAHS distributed $5.5 million in State Homeland Security Grant Program (SHSGP) funding to assist localities and regions across the state purchase equipment and conduct regional planning and exercises to improve communications at the regional level.

- In 2009, the OVAHS distributed $714,000 in Interoperable Emergency Communications Grant Program (IECGP) grant funding across each of the seven interoperability planning regions to perform planning tasks, conduct training and exercises, or update/sustain their governance structures. The OVAHS also awarded $175,000 in IECGP funding to the three Statewide Communications Caches for planning, training and exercises.

- In 2009, Virginia hosted the first jointly sponsored communications conference, which convened hundreds of local, state, and federal stakeholders to discuss interoperability issues. The conference -- formerly known as the Virginia Interoperable Communications Conference (VICC) -- was jointly sponsored by the Virginia Association of Public-Safety Communication Officials (APCO), the Virginia National Emergency Number Association (NENA) and the SIEC.

2010 ACHIEVEMENTS

Each year, the OVAHS develops and distributes an Annual Report that catalogs the year's achievements. The report is delivered to the General Assembly by November 1 of each year and provides elected officials within the Commonwealth an overview of the state's progress toward improved interoperable communications. Highlighted below are several of the Office's achievements in 2010:

- In June 2010, members of public safety, and the emergency response community collaborated and responded to a simulated catastrophic hurricane in the Hampton Roads area through the Virginia Emergency Response Team Exercise (VERTEX). This annual exercise helps response personnel

from state and local governments and volunteer groups role-play their emergency operations functions in order to review and practice the skills needed during an actual emergency.

- The OVAHS updated the Virginia Interoperability Governance Structure graphic to reflect several changes. In the updated interoperability governance graphic, interoperability efforts are conducted through the OVAHS rather than the Commonwealth Interoperability Coordinator's Office (CICO). Additionally, the OVAHS created the State Interoperability Executive Committee-Coordinating Committee (SIEC-CC). The SIEC-CC is a smaller and more strategic advisory group whose members will work closely with the OVAHS and the SIEC at large on interoperability issues. In addition, the Technical Subcommittee merged with the Operations Subcommittee; the Grants Working Group was added as a Subcommittee; as was the Information Sharing Subcommittee.

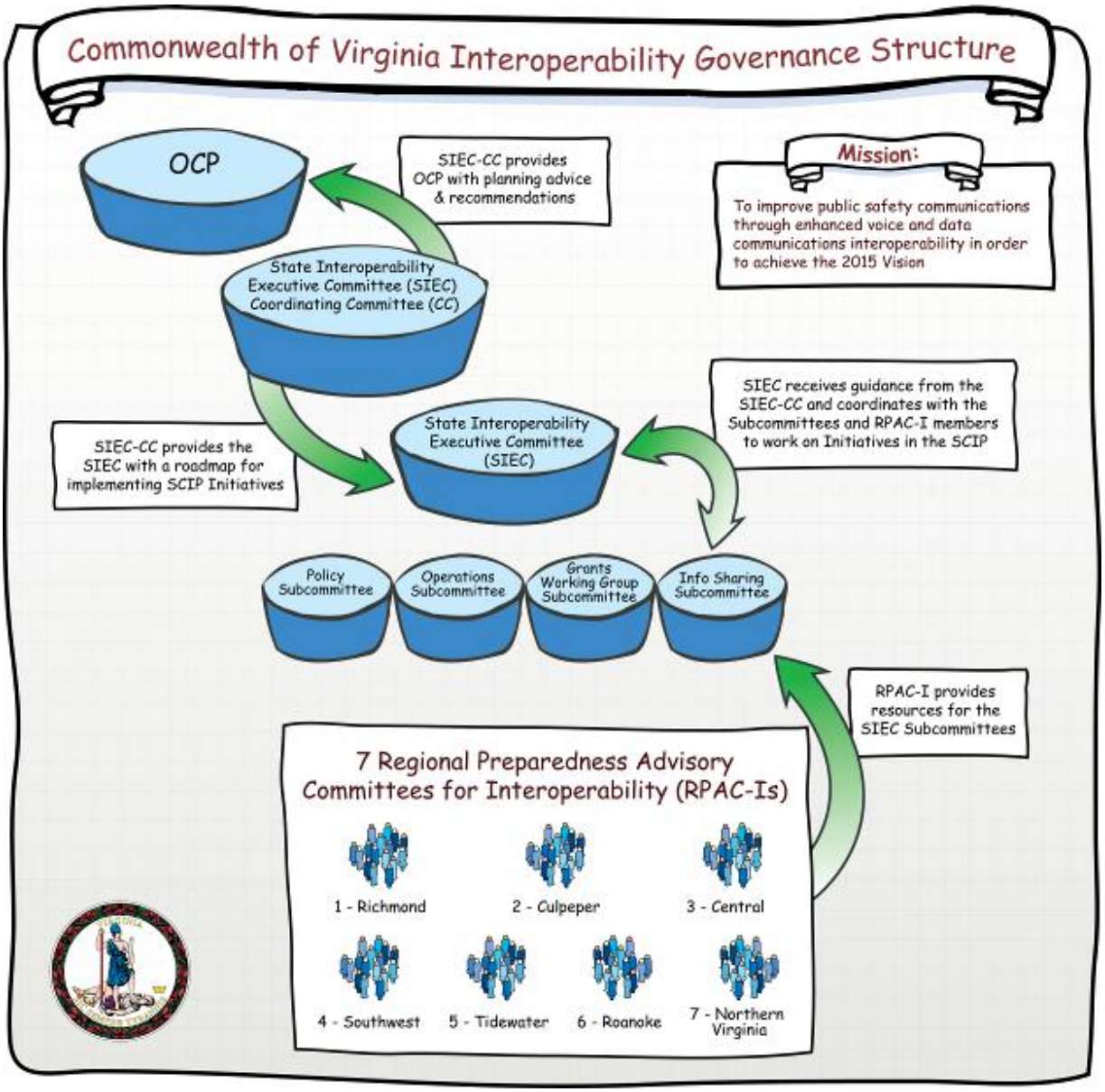

Figure 3: Updated Virginia Interoperability Governance Structure

- In 2010, the SIEC Subcommittees met several times to address the following:

  - The Operations Subcommittee worked closely with leaders from Virginia's Strategic Communications Cache teams in 2010 to create a plan for providing coordinated and targeted statewide Communications Unit Leader (COML) training across Virginia. COML training prepares emergency responders to be communications unit leaders during all-hazards emergency operations, significantly improving communications across the multiple disciplines and jurisdictions responding to an incident. To date, 87 individuals have expressed an interest in participating in regional trainings.

  - The Policy Subcommittee worked closely with Grants Working Group members to review and provide guidance and input to the 2010 Communications Grants Project Idea Form - the "application" that must be completed to obtain State Homeland Security Grant Program (SHSGP) grant funds. As required, the Policy Subcommittee also reviewed current legislation regarding interoperability policy and procedures in the Commonwealth.

  - With the intent to educate Virginia's public safety community, the former Technical Subcommittee worked with VITA and the OVAHS to develop an educational video which describes the Federal Communications Commission's (FCC) mandate to become narrowband compliant by January 1, 2013. This video explains the mandate, the deadlines, and the consequences of non-compliance. The video is available at:

- In 2010, the GWG members reviewed and evaluated 19 SHSGP grant applications and provided award recommendations to the SIEC and the OVAHS for consideration. The GWG spent much of 2010 editing and improving the Communications Homeland Security Funding Project Idea Form to improve the quality of applications requesting grant funding.

- The OVAHS distributed $4.9 million in 2010 SHSGP funding to assist localities and regions in expanding their communications interoperability capabilities.

- Following the communication system failures during and following the events of 9/11, Virginia worked to develop the Strategic Communications Caches -- tactical solutions that can be deployed to the site of an emergency within a few hours. All five communications caches in the Commonwealth were put to good use in 2010 for both emergency response deployments and training and exercises. The five Virginia communication caches are based out of:

  - City of Chesapeake-Hampton Roads
  - Fairfax County
  - City of Harrisonburg - Rockingham County
  - Lunenburg County
  - Montgomery County

  The Fairfax cache deployed with the Virginia Task Force I team to assist with search, rescue, and recovery efforts in Haiti following the January 2010 earthquake. The Chesapeake/Hampton cache was used in June at both the City of Norfolk's Harborfest dock party, and the Tappahannock

Rivahfest celebration. The Lunenburg County Radio Cache became fully operational on June 1st, 2010 and all equipment was procured by July 1st. This year all of the caches demonstrated their capabilities at various conferences in order help agencies better understand the resources available to them. The communications caches can be requested through the Virginia Emergency Operations Center (EOC) by calling 1-804-674-2400 or by logging on through the Virginia WebEOC at https://explore.vdem.virginia.gov/eoc7.

3. State Overview

OVERVIEW

The Commonwealth of Virginia has a unique history, and diverse geography. Virginia is made up of 95 counties and 39 independent cities with 7,642,884 residents occupying 39,594.07 square miles.[4] In 2006, 39 of the 42 independent cities in the United States were in Virginia[5], and it was with this spirit of independence of local government that Virginia was founded. This self-government creates a unique dynamic for interoperability. In the past, counties and cities developed their own procedures for administering public safety and acquired the requisite equipment to provide communications within their own locality. This resulted in hundreds of independent communications systems providing sufficient coverage for localities in most cases, but lacking the technological or cultural ability to work together.

Virginia demonstrates quite significantly the difference between the "haves and have-nots." With a vast rural population, Virginia must continually ensure that its rural communities are provided with basic operability while considering the minimal levels of acceptable interoperability. Virginia's long east-west axis means that Northern Virginia lies closer to New York City than it does to its rural western panhandle. Communications interoperability in Virginia must be redefined to exist in this type of environment where resources are not easily shared, and there is vast distance between the well-developed communities and their rural counterparts.

GEOGRAPHY

Virginia's geography can be divided into five geographical regions: the Atlantic Coastal Plain, the Piedmont, the Blue Ridge, the Appalachian Ridge and Valley Region, and the Appalachian Plateau (see Figure 3).

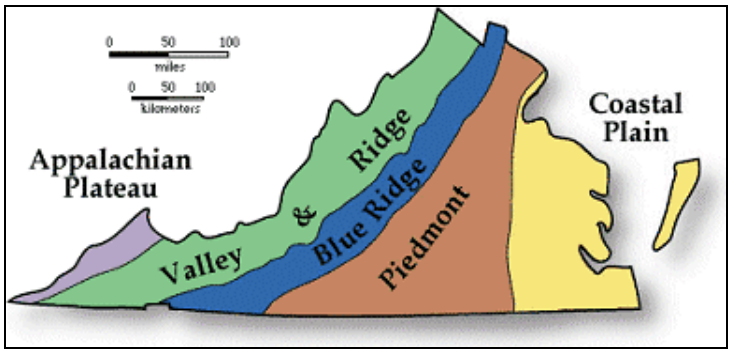

Figure 4: Five Geographical Regions of Virginia

Atlantic Coastal Plain: The Atlantic Coastal Plain runs from north to south along the Atlantic Ocean. This area of lowlands stretches about 100 miles inland and is covered with salt marshes and swamps. It is often called the Tidewater because of the flow of water up and down the coastal inlets and bays as the tide

[4] 2000 Census, U.S. Census Bureau : http://quickfacts.census.gov/qfd/states/51000.html
[5] Counties and Equivalent Entities of the United States, Its Possessions, and Associated Areas; Change Notice No. 7 (2001).

moves in and out. The Atlantic Coastal Plain is divided by the Chesapeake Bay into a mainland in the west and a peninsula on the east, called the Eastern Shore.

Piedmont: To the west of the Atlantic Coastal Plain is the Piedmont, Virginia's largest geographical land region. Sloping gradually upward from elevations of 200 to 300 feet above sea level in the east to 800 to 900 feet above sea level in the west, the rolling plain of the Virginia Piedmont covers most of central Virginia. About 40 miles wide in the northeast, the Piedmont expands to about 140 miles wide at the North Carolina border. The rivers and streams of the Piedmont generally flow in a southeasterly direction, breaking into low waterfalls at the "fall line" where the Piedmont meets the Atlantic Coastal Plain.

Blue Ridge: To the west of the Piedmont, lies the Blue Ridge. Northeast of Roanoke, Virginia, the Blue Ridge rises steeply from the Piedmont in the east and the Appalachian Ridge and Valley Region in the west. It is the main eastern mountain range of the Appalachian Mountains. South of Roanoke, the Blue Ridge expands into a plateau with valleys, deep ravines, and the highest peaks in Virginia. Mount Rogers, the highest point in Virginia, is located in the Blue Ridge Mountains, south of Roanoke.

Appalachian Ridge and Valley Region: Extending southwest to northeast along Virginia's western border is the Appalachian Ridge and Valley Region. The Great Valley, sometimes called the Valley of Virginia, lies against the Blue Ridge in the east. Actually, the Great Valley is a series of valleys divided by mountains. The largest and most well-known of these valleys is the Shenandoah Valley. The Appalachian Ridge and Valley Region are riddled with caverns carved into the abundant limestone.

Appalachian Plateau: In the far southwestern portion of Virginia lies the Appalachian Plateau. This plateau extends into Kentucky as the Cumberland Plateau. Covered with rivers, streams, and forests, the Appalachian Plateau averages about 2,000 feet above sea level.[6]

REGIONS

To foster collaboration across the state and plan for homeland security issues, the Governor divided the Commonwealth into seven regions (see Figure 4, Regional Preparedness Advisory Committee Regions). The counties and cities located within each region are listed in Appendix D.

[6] The Geography of Virginia Web site: http://www.netstate.com/states/geography/va_geography.htm.

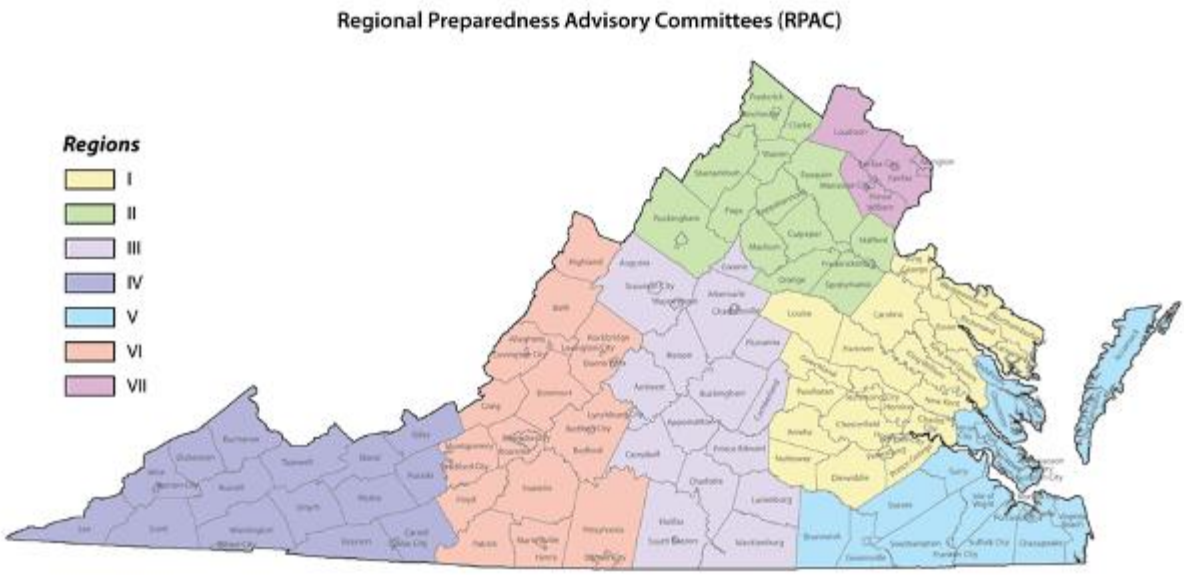

Figure 5: Regional Preparedness Advisory Committee Regions

LARGEST CITIES AND COUNTIES

Virginia's most populous cities are Virginia Beach (1), Chesapeake (2), and Norfolk (3)[7] which are located within the Tidewater Region. Virginia's most populous county is Fairfax County with slightly over one million residents[8], located in the Northern Virginia Region. The Tidewater region (which includes Hampton Roads), Northern Virginia (part of the National Capital Region), and Central Virginia (which includes Richmond and the surrounding areas) have been designated as Urban Area Security Initiatives (UASIs) by DHS. A jurisdiction defined as a UASI receives federal preparation funding because it is considered to be at high risk for incidents involving weapons of mass destruction.

The maps on page 16 depict the three UASIs within the Commonwealth of Virginia.

[7] 2000 Census, U.S. Census Bureau
[8] 2000 Census, U.S. Census Bureau

Figure 6: UASI Maps

WEATHER

Virginia is one of the few states in the union with such a diverse weather pattern that its residents face the dual threat of both hurricanes and blizzards in any given year. These variable weather conditions require first responders to plan and prepare year-round, and interoperate with multiple jurisdictions and agencies at all levels of government.

In Virginia, hurricane season starts in June and runs through October and is followed by the threat of wildfires and drought in early fall. With winter comes snow and ice storms, which create treacherous travel conditions and widespread power outages. With winter's thaw and spring's arrival, the state faces flooding, tornadoes, and potential wildfires once more before heading back into summer and the threat of severe thunderstorms and hurricanes.

UNIQUE ATTRIBUTES

Because of its proximity to and direct interaction with the Nation's Capital, Virginia faces a significant threat of terrorist attack. Virginia experienced significant loss during the September 11, 2001 terrorist attacks when the third plane hit the Pentagon (located in Arlington, Virginia) killing 184 citizens and military personnel (59 on American Airlines Flight 77, and 125 within the Pentagon[9]) and injuring countless others.

In the event of a major disaster in the District of Columbia, Virginia contains several major evacuation routes. The major North/South roadways of Interstates 95 and 81 traverse the state. Additionally, I-66 East/West in the North and I-64 East/West in the South are heavily traveled on a daily basis.

[9] CNN Post-9/11 Reports

Virginia's ports are also a significant entry point for imported goods and must be sufficiently safe-guarded to protect against terrorist threats. The Hampton Roads area is the largest military community on the east coast.

SPECIAL EVENTS

In 2010, Virginia hosted a variety of special events that attracted hundreds of thousands of attendees, including NASCAR races in Richmond, Bristol, and Martinsville, and the 100th anniversary of the Boy Scout Jamboree, an event that requires weeks of preparation in order to provide emergency management response. For these local events, and for large scale national events that play out locally, like the Presidential Inauguration, interoperability at the local, state, and Federal level is necessary in order to provide safety and response to hazards and incidents. These large scale events test the capabilities and durability of communications systems and operating procedures, and introduce major strategic challenges and implications for emergency responders.

CRITICAL INFRASTRUCTURE

According to the DHS National Infrastructure Protection Plan (NIPP), critical infrastructure is defined as "assets, systems and networks, whether physical or virtual, so vital to the United States that the incapacity or destruction of such assets, systems or networks would have a debilitating impact on security, national economic security, public health or safety, or any combination of those matters." In Virginia, the Office of Veterans Affairs and Homeland Security works to protect the Commonwealth's critical infrastructure and key resources, working with the Virginia Department of Emergency Management (VDEM), the Virginia State Police (VSP) and other local, state, Federal, and private partners.

4. Statewide Communication Interoperability Plan (SCIP)

PURPOSE

For years, the Virginia SCIP has served as the backbone for regional and local interoperable communications planning. It establishes a future vision for communications interoperability and aligns the Commonwealth's emergency response agencies with that vision and the goals, objectives, and initiatives for achieving that vision. The first Virginia SCIP was released in FY 2005 and it defined statewide initiatives designed to improve interoperable communications. The 2010 SCIP expands on the previous year's initiatives.

METHODOLOGY

After the completion of the initial FY 2005 SCIP, the Virginia Code was modified to require an annual update and implementation. The code instructs state agencies and localities to align with the SCIP by 2015 in order to receive state and federal funds for communications interoperability. According to Virginia Code, "*the office of the Governor shall ensure that the annual review and update of the statewide interoperability strategic plan is accomplished and implemented to achieve effective and efficient communication between state, local, and federal communication systems. All state agencies and localities shall achieve consistency with and support the goals of the statewide interoperability strategic plan by July 1, 2015, in order to remain eligible to receive state or federal funds for communications programs and systems*."[10]

The Virginia governance structure works to ensure that state, local, and regional input continues to be the primary driver of the statewide planning process. The Office of Veterans Affairs and Homeland Security engages the SIEC for input and feedback during the annual SCIP update.

COMPLIANCE WITH THE SCIP

Compliance with the SCIP is mandatory in order to qualify for and receive state-distributed grant funding. The Grants Working Group (GWG), the SIEC-CC, SWIC, and the Senior Leadership Team are the designated authorities for reviewing interoperable communications funding applications from across the Commonwealth. The SIEC Grants Working Group (GWG) makes funding recommendations to the SIEC-CC, which then passes its recommendations on to the SWIC. The SWIC passes his or her recommendations on to the Senior Leadership Team made up of members from both VDEM and the OVAHS. The review process by each group helps determine compliance with grant eligibility requirements, and assesses the application's alignment with the SCIP. To comply:

1. Grant requests must support and/or align with the SCIP and the Virginia Operations Model[11].
2. Applicants must clearly define how the project improves interoperable communications on a multi-discipline and multi-jurisdictional basis.
3. Applicants must clearly define how the project promotes regional cooperation and addresses mutual aid.
4. Applicants must be National Incident Management System (NIMS) certified and compliant.

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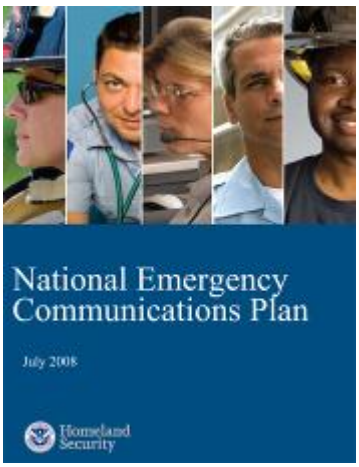
[10] http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+9.1-1200
[11] Both can be found at www.interoperability.virginia.gov

5. Equipment purchased must be on the Department of Homeland Security's Grants and Training (G&T) Authorized Equipment List (AEL) or an exception letter must be on file and approved.
6. Subscriber radios purchased must be programmed with mutual aid and the national interoperability channels within that radio's frequency band.
7. When procuring equipment for communication system development and expansion, a standards-based approach should be used to begin migration to multi-jurisdictional and multi-disciplinary interoperability. Specifically, all new voice systems will be compatible with the ANSI/TIA/EIAA-102 Phase 1 (Project 25 or P25) standards.

Alignment to the National Emergency Communications Plan (NECP) Milestones

In June 2008, the DHS Office of Emergency Communications (OEC) developed a National Emergency Communications Plan (NECP), which provides short- and long-term guidance to address national emergency communications deficiencies.[12]



Within the NECP are objectives and initiatives that provide national guidance to federal, state, local, and tribal agencies to implement key activities that will improve emergency communications. The objectives and initiatives fall under prescribed NECP Milestones which states can reference as key checkpoints for assessing their progress toward improved emergency communications.

It is one of Virginia's top priorities to ensure the SCIP aligns with the following objectives and initiatives specified within the NECP Milestones.[13] Listed below are several relevant NECP objectives and initiatives, and an explanation of how Virginia has addressed or is planning to address each one.

Objective 1: Formal Governance Structures and Clear Leadership Roles - Initiative 1.1

Milestone: "Within 12 months, all States and territories should establish full-time statewide interoperability coordinators or equivalent positions."

- **Virginia's Action:**
  - In December 2003, Virginia hired a full-time interoperability coordinator.

Objective 1: Formal Governance Structures and Clear Leadership Roles - Initiative 1.3

Milestone: "Within 12 months, tactical planning among Federal, State, local, and tribal governments occurs at the regional interstate level."

- **Virginia's Action:**
  - Virginia participates in the All Hazards Consortium (AHC), Multi-State Information Sharing Analysis Center, FEMA Region 3 Regional Emergency Communications Working Group,

[12] Department of Homeland Security Office of Emergency Communications Online Fact Sheet for the NECP: http://www.dhs.gov/xnews/releases/pr_1217534334567.shtm

[13] Department of Homeland Security Office of Emergency Communications National Emergency Communications Plan, 2008, Section 3 beginning on page 9.

and National Capital Region Regional Preparedness Working Group for Interoperability to work on tactical planning with neighboring states.

Objective 3: Common Planning and Operational Protocols - Initiative 3.1
Milestone: "Within 18 months … programs an appropriate set of frequency-band-specific nationwide interoperability channels into all existing emergency responder radios..."

- **Virginia's Actions:**
  - Virginia is building out the national interoperability channels, requiring all grant applicants to program the national interoperability channels into newly purchased, grant-funded equipment.
  - Virginia supports the expansion of national interoperability channels in all bands to allow responders to use their home system's radio regardless of location within the Commonwealth of Virginia.

Objective 3: Common Planning and Operational Protocols - Initiative 3.1
Milestone: "Within 24 months, all SCIPs reflect plans to eliminate coded substitutions throughout the Incident Command System (ICS), and agencies incorporate the use of existing nationwide interoperability channels into SOPs, training, and exercises at the federal, State, regional, local, and tribal levels."

- **Virginia's Action:**
  - Virginia developed a common language protocol for use throughout the state that is a nationally recognized best practice model for other states interested in transitioning away from coded transmissions during radio communications.

Objective 3: Common Planning and Operational Protocols - Initiative 3.2
Milestone: "Within 12 months, all Federal, State, local, and tribal emergency response providers within UASI jurisdictions have implemented the Communications and Information Management section of the National Incident Management System (NIMS)."

- **Virginia's Action:**
  - Virginia endorses the use of the NIMS and the Incident Command System (ICS) to guide how disciplines operate with one another for mutual aid. The Office of Veterans Affairs and Homeland Security supports NIMS training and exercises and promotes NIMS compliance as well as the use of ICS.

Objective 7: Disaster Communications Capabilities - Initiative 7.2
Milestone: "Within 24 months, all Federal, State, local, and tribal agencies in UASIs will have defined alternate/backup capabilities in emergency communications plans."

- **Virginia's Action:**
  - Virginia will continue to expand the STR to enhance back-up communications capabilities within the Commonwealth. Currently, all three of the UASIs in Virginia have strategic technology reserves.

Objective 7: Disaster Communications Capabilities - Initiative 7.2
Milestone: "Within 24 months, complete disaster communications training and exercises for all 56 States and territories."

- **Virginia's Actions:**

- Virginia continues to incorporate more interoperable disaster communications training and exercises into existing statewide exercises.
- Each year, the Virginia Emergency Response Team Exercise (VERTEX) serves as a statewide exercise opportunity designed to prepare response agencies and local government representatives for their role in an emergency.
- Exercise activities have also included deployment of STR assets, hurricane evacuation communication drills, and monthly communication drills of systems around nuclear power stations.

ALIGNMENT TO THE NATIONAL EMERGENCY COMMUNICATIONS PLAN (NECP) GOALS

In 2010 states were required to demonstrate alignment with the DHS NECP Goal 1. Goal 1 is as follows:

By 2010, 90 percent of all high-risk urban areas designated within the Urban Areas Security Initiative (UASI) are able to demonstrate response-level emergency communications within one hour for routine events involving multiple jurisdictions and agencies.

In 2010 the Central Virginia, National Capital Region, and Richmond UASIs successfully demonstrated their capabilities at Harborfest, the July 4th celebration on the National Mall, and the Richmond Speedway respectively. All three UASIs received passing marks from DHS and suggested improvements in an After Action Report.

In 2011, states must demonstrate alignment with NECP Goal 2, which measures capabilities and performance within all the county and tribal areas. Goal 2 states:

By 2011, 75 percent of non-UASI jurisdictions are able to demonstrate response-level emergency communications within one hour for routine events involving multiple jurisdictions and agencies.

The OVAHS is working now to identify the methodology that will be used to meet this DHS NECP Goal 2 requirement in 2011.

5. Strategy

Through collaboration and planning with local public safety and emergency response stakeholders, the Commonwealth of Virginia created a Vision designed to help guide communications interoperability efforts and improve interoperability by 2015. The Vision states:
"By 2015, agencies and their representatives at the local, regional, state, and federal levels will be able to communicate using compatible systems, in real time, across disciplines and jurisdictions, to respond more effectively during day-to-day operations and major emergency situations."

INTEROPERABILITY OBJECTIVES

In support of the strategic Vision, the Commonwealth identified ten strategic objectives to improve interoperable communications by 2015. These goals focus on the steps required to reach the desired level of interoperability. They are:

Objective 1: Strategically guide statewide interoperability governance and outreach activities
Objective 2: Improve communications operability as necessary to support interoperability

Objective 3: Achieve voice and data communications interoperability within each locality to enhance multi-discipline response capabilities

Objective 4: Achieve multi-discipline and multi-jurisdiction voice and data communications interoperability to enhance regional response capabilities

Objective 5: Enhance state agencies' voice and data communications interoperability across the Commonwealth to provide comprehensive support during emergencies

Objective 6: Provide region-to-region and region-to-state voice and data communications interoperability to enhance mutual aid response capabilities

Objective 7: Create communications back-up and redundancy for interoperability systems to ensure communications are maintained following catastrophic events

Objective 8: Support interoperable communications with federal entities and other states to respond to national and multi-state emergencies

Objective 9: Integrate private entities and participants in the state Emergency Operations Plan (EOP) into interoperability planning efforts to ensure communications are maintained during emergencies and recovery efforts
Objective 10: As appropriate statewide, utilize Common Language as well as coordinated protocols and standards

2011 STATEWIDE INITIATIVES

The 2011 SCIP builds upon previous initiatives and expands the breadth of the Commonwealth's overall efforts to improve interoperable communications throughout the area. In 2011, the Commonwealth plans to implement or expand upon the following initiatives.

Governance

- Determine the Commonwealth's specific operational needs for voice and data communications, and identify regional operational gaps by December 31, 2011
- Create the State Interoperability Executive Committee-Coordinating Committee (SIEC-CC) to provide more interoperability direction, strategy, and guidance at the state-level
    - The SIEC-CC will provide recommendations and guidance to the SIEC to help successfully implement the interoperability strategy

SOPs

- Further develop the Commonwealth's program for credentialing designated communications personnel
- Implement Commonwealth-wide common channel naming and programming standards based on NPSTC recommendations
- Develop a state-level Field Operations Guide (FOG) that includes input from each of the seven interoperability regions by December 31, 2011

Technology

- Identify the localities without a COMLINC connection, determine the need for a COMLINC connection, and identify the challenges that must be overcome in order to establish a connection to STARS
- Work to achieve narrowband compliance in all seven regions by the FCC deadline of January 1, 2013 and ensure grant funding supports narrowbanding and P25 efforts
- Continue to establish the Strategic Technology Reserve (STR) by bringing the three Type II communications caches up to Type I status
- Work to place national interoperability public safety frequencies on existing Land Mobile Radio towers statewide for VHF low band and high band, UHF, 700 MHz and 800 MHz with the goal of achieving statewide coverage for the interoperability frequencies

Training & Exercises

- The Office of Veterans Affairs and Homeland Security, state agencies, and stakeholders will work together to formalize a training and accreditation process for Communications Unit Leader (COML) training
    - By December 31, 2011, the OVAHS will work with VDEM and certified COML instructors who also serve as members of the communication cache teams to provide at least one COML training session in each region
- By December 31, 2011, the OVAHS will coordinate with VDEM to develop a statewide Communications Training and Exercise plan

ROLES AND RESPONSIBILITIES

In 2011, the Commonwealth will implement the identified initiatives by leveraging both internal resources, as well external resources such as contractors and local stakeholders. In the past, the Commonwealth successfully worked with a variety of emergency response stakeholders through the RPAC-Is, the SIEC and its Subcommittees, as well as Initiative Action Teams, to develop the core guidance and documentation needed to further interoperability efforts.

The OVAHS is responsible for implementing the SCIP and is supported by the established Virginia governance structure in this effort. A description of the governance structure is available in Appendix A. The OVAHS manages a variety of projects, and is responsible for coordinating and facilitating regular SIEC-CC, SIEC, and RPAC-I meetings throughout the year. The OVAHS will work with the SIEC, its Subcommittees, and the RPAC-Is as necessary to implement the initiatives in the 2011 SCIP. This coordinated oversight and engagement ensures the Commonwealth is able to work on the 2011 initiatives as listed in this year's SCIP, distribute and manage FY11 grant funding to locals, and develop the 2012 SCIP.

Throughout the year, the OVAHS will offer outreach, support, and guidance to stakeholders, engaging them at the APCO-NENA-SIEC conference and at RPAC-I meetings, and will communicate key messages to them through e-mail and the "Interoperability in Virginia" Web site.[14] The OVAHS will communicate with elected officials through the Annual Report and through other briefings to the state delegation, and will provide input at the Federal level as requested. The OVAHS will also communicate with and provide information to the media through press releases, interviews, and articles as appropriate.

As part of the OVAHS, the full-time Statewide Interoperability Coordinator (SWIC) will continue to help coordinate and oversee regional development of standard operating procedures, governance structures, usage, technology, procurement and installation, and training and exercises, in alignment with the SAFECOM *Interoperability Continuum*.

[14] Interoperability in Virginia Web site: www.interoperability.virginia.gov

6. Measurement

LONG-TERM PERFORMANCE MEASURES

Long-term performance measures help the Commonwealth gauge its progress in achieving communications interoperability. Improved performance helps ensure that Virginia receives an adequate amount of federal grant funding to support its interoperable communications initiatives.

In August 2009 the OVAHS released Part I of the Interoperability Baseline Survey to measure the state's level of interoperability against the SAFECOM *Interoperability Continuum*, catalog communications capabilities, and document governance structures, usage, standard operating procedures, and levels of training as well as planned exercises. The Baseline Survey was designed to assist the Commonwealth with future communications interoperability planning.

Incorporating lessons learned from the 2007 Interoperability Baseline Survey, the OVAHS again formed a Baseline Survey IAT consisting of state and local-level stakeholders. The IAT provided input on the survey approach and content, and beta tested the survey prior to release. In addition, the OVAHS formed an Outreach Committee with representation from each of the regions in Virginia to help cultivate interest and response, and help the OVAHS follow up with jurisdictions that were non-responsive or had questions.

The survey was divided into two parts. Part I of the survey asked questions pertaining to governance, standard operating procedures (SOPs), usage, and training and exercises (four of the five lanes of the SAFECOM *Interoperability Continuum*). It was sent to the primary representative from each of the 134 jurisdictions in the Commonwealth – either the CAO or officially appointed representative on the Regional Preparedness Advisory Committee for Interoperability (RPAC-I). The OVAHS received an 80 percent response rate to Part I of the survey.

Part II of the survey, which was to be released in October 2009, would engage representatives from each jurisdiction's Public Safety Answering Point (PSAP) in order to catalog technology capabilities. In most cases, it was presumed that a jurisdiction's PSAP manager would enter the technology data into the Communications Assets Survey and Mapping (CASM) tool.

Unfortunately, Phase II of the survey was never released, and therefore it is not possible to fully measure performance in 2010.

In 2011, interoperability will be defined by the SIEC-CC and will likely be based off of the language identified under the NECP Goal 2, which states: "*By 2011, 75 percent of all non-Urban Area Security Initiative (UASI) jurisdictions are able to demonstrate response-level emergency communications within one hour for routine events involving multiple jurisdictions and agencies. OEC defines 'non-UASI jurisdictions' as all the Nation's counties, county-equivalents (e.g., a parish), and tribal nations.*"

The NECP Goal 2 language will serve as a foundation for measuring interoperability progress in conjunction with the SAFECOM *Interoperability Continuum*. The OVAHS has compiled all of the survey data it collected, as well as data collected by VITA, and VDEM, to analyze levels of interoperability today. That data will be combined with the data yet to be collected when the regions demonstrate their

interoperability performance and capabilities this year, as required by DHS OEC. DHS OEC is requiring all counties across the country to demonstrate their response-level emergency communications during day-to-day incidents, in alignment with NECP Goal 2.

Ultimately, Virginia's intent is to achieve a sophisticated level of interoperability with a strong focus on planning, outreach, and stakeholder engagement in order to overcome the issues and barriers that affect regional and state progress toward increased interoperability, as guided by the *Interoperability Continuum*.

7. Funding

Identifying ongoing funding to support the statewide interoperability effort will continue to be a focus as programs supported by DHS evolve.

In 2011, the OVAHS will work with VDEM, the State Administering Agency (SAA), to provide IECGP and SHSGP grant funds for interoperability projects. These grants will help support local planning projects and the governance structures that bind them, equipment purchases and upgrades, training and exercises, as well as the Communications Caches.

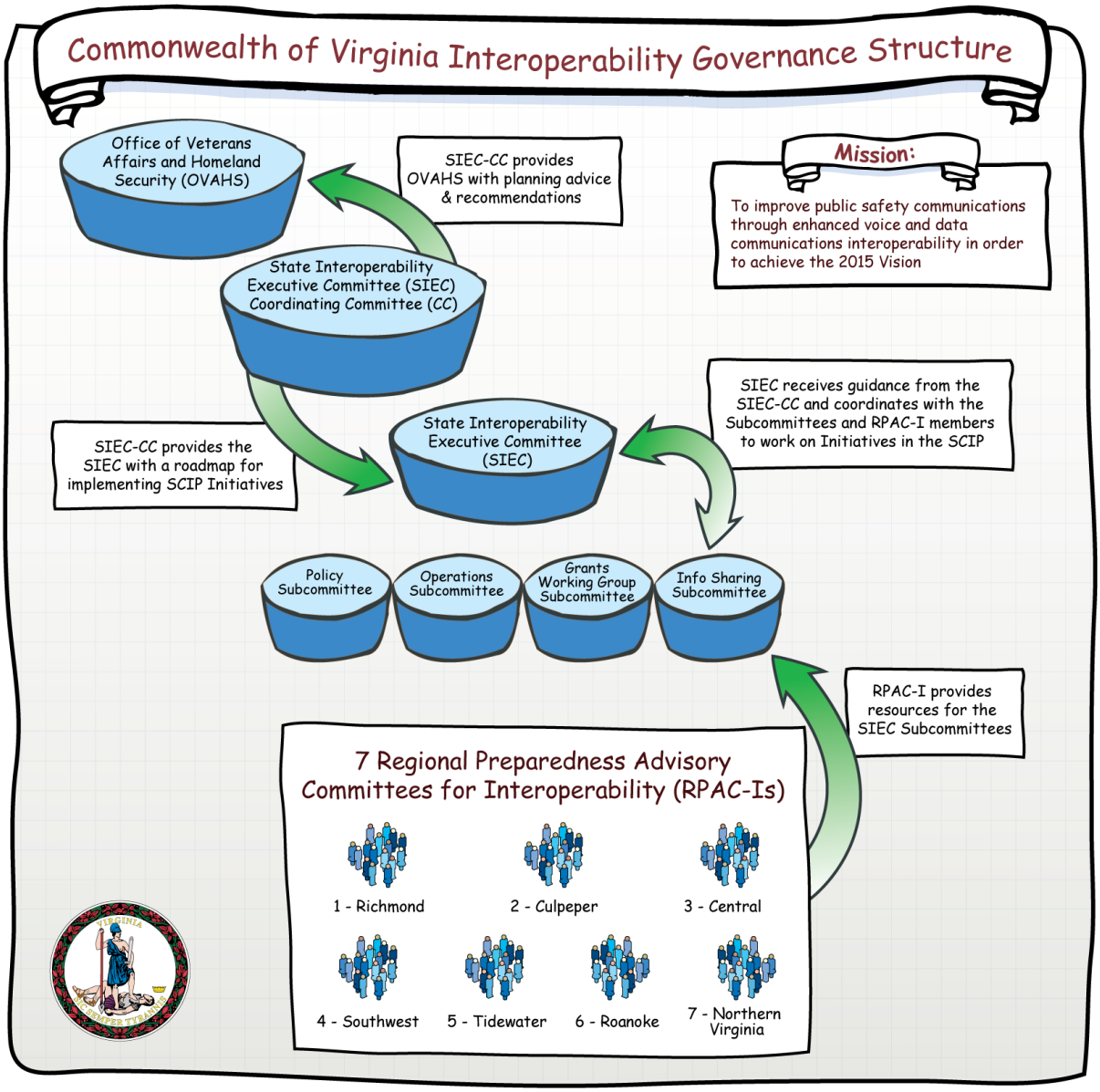
8. Closing

Improving communications interoperability in the Commonwealth of Virginia is an ongoing process. The Commonwealth's regional approach to improving interoperable communications, along with the initiatives in the 2011 SCIP, will help address interoperability issues in the short-term while working to overcome interoperability challenges by 2015. Using the 2011 SCIP, the Commonwealth can more effectively plan for the future and evaluate how policies, training, and investments today will benefit its citizens in the future.

Appendices

Appendix A: Virginia's Governance Structure

The **Governance Structure graphic** provide members with the structure for the Commonwealth's planning and implementation process. Below the graphic is a brief description of the roles and responsibilities of each component represented.



- **Office of Veterans Affairs and Homeland Security (OVAHS):** One of OVAHS' primary roles is to work with interoperability stakeholders to ensure that the SCIP serves as a roadmap for reaching the 2015 Interoperability Vision. The SCIP must also help address and plan for the communications interoperability needs of Virginia's public safety practitioners, the Commonwealth and its agencies, and the Federal government. The OVAHS is responsible for working with interoperability stakeholders to implement the initiatives in the SCIP, review grant funding applications, and produce long-term strategies for improving communications interoperability.
- **State Interoperability Executive Committee - Coordinating Committee (SIEC-CC):** The SIEC-CC serves as a small, strategic advisory group whose members will work closely with the OVAHS and the SIEC on interoperability issues. The SIEC-CC will serve as the primary recommending body to the OVAHS and the Office of the Governor concerning communications interoperability issues. These issues include, but are not limited to 700 MHz and the D Block of spectrum, the Commonwealth's Link to Communications (COMLINC), the Statewide Agencies Radio System (STARS), grants planning, statewide information sharing, communications planning, training and exercises.
- **State Interoperability Executive Committee (SIEC):** The SIEC helps to define and implement the initiatives outlined in the SCIP. Members of the SIEC draw upon their experience and knowledge of emergency responder needs and capabilities to provide strategic guidance and recommendations to the SIEC-CC, the OVAHS, and ultimately the Governor.
- **SIEC Subcommittees:** The SIEC has four Subcommittees—Operations, Policy, Grants Working Group, Information Sharing—that address relevant and timely interoperability issues to assist the Commonwealth in planning and executing its strategic goals and objectives. The Subcommittees support the SIEC in the planning and implementation of specific initiatives in the SCIP by conducting research and analysis to develop recommendations for consideration.
- **Regional Preparedness Advisory Committees for Interoperability (RPAC-I):** The RPAC-Is are regional committees that serve dual purposes. The members of each regional RPAC-I coordinate their regional interoperability strategies and gather input to share with the SIEC. A representative from each of the seven RPAC-Is sits on the SIEC where they provide regional perspective and input into the statewide decision-making processes.

Appendix B: SIEC Members

Recommended Representation from SAFECOM Guidance	SIEC Members
Governor's Office	**Office of Veterans Affairs and Homeland Security**
State and Local Elected Officials	**Virginia Association of Counties** **Virginia Municipal League**
State and Local Emergency Medical Services	**Virginia Department of Health** **Virginia Association of Governmental EMS Administrators**
State and Local Fire Response Services	**Virginia Fire Chiefs Association** **Virginia Professional Firefighters Association** **Virginia State Firefighters Association**
State and Local Law Enforcement	**Secretary of Public Safety** **Virginia Association of Chiefs of Police** **Virginia Sheriff's Association** **Virginia State Police** **Statewide Agencies Radio System (Virginia State Police)** **Department of Criminal Justice Services**
State and Local Homeland Security Offices	*No local Homeland Security Offices exist in Virginia, so the OVAHS serves in this role.*
Tribal Governments	*The OVAHS will work to incorporate input from state-recognized tribes into the development of all versions of the SCIP.*
State and Local Transportation Agencies	**Virginia Department of Transportation**
Military Organizations operating in the State	**Virginia Military Advisory Committee** **Virginia Department of Military Affairs**
Urban Area Security Initiatives (UASI)	**National Capital Region** **Hampton Roads** **Central Virginia**
Other non-government organizations *(such as the American Red Cross, utility companies, etc.)*	**Association of Public Safety Communications Officials** **Virginia Emergency Management Association**
Other organizations with abilities and resources for prevention, response to, and recovery from crises or disasters	**Virginia Information Technologies Agency** **Virginia Department of Emergency Management** **Secretary of Technology** **User Agency Requirements Committee**
Regional Planning Committee Chairpersons for 700 and 800 MHz	**Virginia Information Technologies Agency**

Regional Representation	**Region 1: Richmond** **Region 2: Culpeper** **Region 3: Central Virginia** **Region 4: Southwest** **Region 5: Tidewater** **Region 6: Roanoke** **Region 7: Northern Virginia**

Appendix C: Glossary of Terms

Analog: A signal that may vary continuously over a specific range of values.

Band: The spectrum between two defined limited frequencies. For example, the Ultra High Frequency (UHF) is located from 300 MHz to 3,000 MHz in the radio frequency spectrum.

Bandwidth: The range within a band of frequencies; a measure of the amount of information that can flow through a given point at any given time.

Block grant: Federal grant funding that is allocated to state and localities based on a pre-determined statutory formula.

Channel: A single unidirectional or bidirectional path for transmitting or receiving, or both, of electrical or electromagnetic signals.

Communications interoperability: The ability of public safety agencies to talk across disciplines and jurisdictions via radio communications systems, exchanging voice and/or data with one another on demand, in real time, when needed, and as authorized.

Communications system: A collection of individual communication networks, transmission systems, relay stations, tributary stations, and data terminal equipment usually capable of interconnection and interoperation to form an integrated whole. The components of a communications system serve a common purpose, are technically compatible, use common procedures, respond to controls, and operate in unison.

Coverage: The geographic area included within the protected range of a wireless radio system based upon its FCC licenses.

Cycle: One complete performance of a vibration, electrical oscillation, current alternation, or other periodic process.

Digital: Voice communication occurs as an analog signal; that is, a signal with a voltage, frequency, or phase level that continuously varies. Digital signals at baseband occur as the presence or absence of electronic pulses, often representing only one or many values. Voice transmissions may be sent over digital radio systems by sampling voice characteristics and then converting the sampled information to a digital format.

Discretionary grant: Federal grant funding distributed at the discretion of the agency administering the program funding, usually through a competitive process.

Emergency Management: Public protection, central command and control of public safety agencies during emergencies

Environmental Health/Hazardous Materials specialists: Environmental health personnel

First responders: Individuals who in the early stages of an incident are responsible for the protection and preservation of life, property, evidence, and the environment, including emergency response providers, as well as emergency management, public health, clinical care, public works, and other skilled support (such as equipment operators) that provide immediate support services during prevention, response, and recovery operations.

Formula grant: Federal grant that is allocated based on a predetermined statutory formula.

Frequency: The number of cycles or events of a periodic process in a unit of time.

Frequency bands: Where land mobile radio systems operate in the United States, including:

High HF	25-29.99 MHz
Low VHF	30-50 MHz
High VHF	150-174 MHz
Low UHF	450-470 MHz
UHF TV Sharing	470- 512 MHz
700 MHz	764-776/794-806 MHz
800 MHz	806-869 MHz

Grant: Funding made available to local agencies from state and federal government agencies, as well as from private sources, such as foundations. Grants usually require the submission of a formal application to justify one's funding request.

Hertz: Abbreviation for cycles per second.

Infrastructure: The hardware and software needed to complete and maintain the radio communications system.

Interference: Extraneous energy, from natural or man-made sources, that impede the reception of desired signals.

Jurisdiction: The territory within which power or authority can be exercised.

Local revenue fund: Funding obtained by local governments through local taxes (e.g. sales tax, property tax), user fees, and other user charges, as well as through the issuing of debt instruments, such as bonds.

Locality: A particular neighborhood, place, or district.

Metropolitan Statistical Areas (MSAs): Metropolitan areas in the U.S. are defined by the federal government as MSAs.

Modem: An acronym for modulator/demodulator, which is a device that translates digital signals coming from a computer into analog signals that can be transmitted over standard telephone lines. The modem also translates the analog signal back into a digital signal that a computer can understand.

Mutual aid: The mutual aid mode describes major events with large numbers of agencies involved, including agencies from remote locations. Mutual aid communications are not usually well planned or

rehearsed. The communications must allow the individual agencies to carry out their missions at the event, but follow the command and control structure appropriate to coordinate the many agencies involved with the event.

Mutual aid channel: A radio channel specifically allocated for use during emergency mutual aid scenarios.

Narrowbanding: Generally, narrowband describes telecommunication that carries voice information in a narrow band of frequencies. For state and local public safety, narrowbanding typically refers to the process of reducing the useable bandwidth of a public safety channel from 25 kHz to 12.5 kHz. The FCC issued the migration of PLMR systems using frequencies in the 150-174 MHz and 421-512 MHz bands to narrowband technology. These rules set deadlines on applications for new wideband systems, modifications of existing wideband systems, manufacture and importation of 25 kHz equipment, the requirement for public safety to migrate to 12.5 kHz systems by January 1, 2013.

Receiver: The portion of a radio device that converts the radio waves into audible signals.

Refarming: An administrative process conducted by the FCC to reallocate channel bandwidths and increase spectrum efficiency.

Repeater: In digital transmission, equipment that receives a pulse train, amplifies it, retimes it, and then reconstructs the signal for retransmission; in fiber optics, a device that decodes a low-power light signal, converts it to electrical energy, and then retransmits it via an LED or laser source. Also called a "regenerative repeater".

Spectrum: The region of the electromagnetic spectrum in which radio transmission and detection techniques may be used.

Spectrum efficiency: The ability to optimize the amount of information sent through a given amount of bandwidth.

Strategic Technology Reserve: The Strategic Technology Reserve (STR) is a suite of communications technology and manpower designed to help establish communications when existing critical infrastructure is damaged, destroyed or otherwise inaccessible during an emergency, or disaster. The STR is also available when an incident requires more communications resources than are locally available.

Steering committee: A group of high-level officials charged with setting policy for a project.

Supplemental responders: Responders who provide support to first responders during incidents requiring special assistance.

Transmitter: The portion of a radio device that sends out the radio signal.

Trunked radio system: A system that integrates multiple channel pairs into a single system. When a user wants to transmit a message, the trunked system automatically selects a currently unused channel pair and assigns it to the user, decreasing the probability of having to wait for a free channel for a given channel loading.

Appendix D: Acronym Table

Acronym	Meaning
AEL	Authorized Equipment List
AHC	All Hazards Consortium
APCO	Association of Public Safety Communication Officials
CASM	Communications Assets Survey and Mapping (Tool)
CIC	Commonwealth Interoperability Coordinator
CICO	Commonwealth Interoperability Coordinator's Office
COMLINC	Commonwealth's Link to Interoperable Communications
DHS	Department of Homeland Security
EOC	Emergency Operations Center
ERC	Emergency Response Council
GIS	Geographic Information Systems
IAT	Initiative Action Team
ICS	Incident Command System
IECGP	Interoperable Emergency Communications Grant Program
MOU	Memorandum of Understanding
NCR	National Capital Region
NECP	National Emergency Communications Plan
NENA	National Emergency Numbers Association
NIJ	National Institute of Justice
NIMS	National Incident Management System
NIPP	National Infrastructure Protection Plan
NoVA	Northern Virginia
NPSTC	National Public Safety Telecommunications Council
NRP	National Response Plan
OCP	Office of Commonwealth Preparedness
OEC	Office of Emergency Communications
Ops Model	*Commonwealth of Virginia Operations Model*
OVAHS	Office of Veterans Affairs and Homeland Security
P25	Project 25
PSIC	Public Safety Communications Interoperability (Grant Program)
RFP	Request for Proposal
RPAC	Regional Preparedness Action Committee
RPAC-I	Regional Preparedness Action Committee for Interoperability
SCIP	Statewide Communication Interoperability Plan
SCP	Secure Commonwealth Panel
SHSGP	State Homeland Security Grant Program
SIEC	State Interoperability Executive Committee
SIEC-CC	State Interoperability Executive Committee – Coordinating Committee
SIRS	Statewide Interdepartmental Radio System
SOPs	Standard Operating Procedures
STARS	Statewide Agencies Radio System
STR	Strategic Technology Reserve
UASI	Urban Area Security Initiatives
VAGEMSA	Virginia Association of Governmental EMS Administrators
VDEM	Virginia Department of Emergency Management
VDOT	Virginia Department of Transportation
VGIN	Virginia Geographic Information Network
VICC	Virginia Interoperable Communications Conference
VITA	Virginia Information Technologies Agency
VSP	Virginia Department of State Police
XML	Extensible Markup Language

Appendix E: Communication Cache Policies & Procedures

Communication Cache Compliance Documentation

Definition of Common Terminology

- ***Incident Commander: (Type I-V)***
  - On the ground leading/commanding person who may request the radio cache for an emergency incident
- ***Cache Contact: (Type I-V)***
  - Persons responsible for processing initial emergency request for radio cache deployment: might not be true to every situation. Might be another available number to call rather than Dispatch. Smaller localities might just have a POC.
  - Liaisons between Incident Commander and Radio Cache Manager and/or Cache Decision Leader
- ***Radio Cache Manager: (Type I-III)***
  - Person from hosting locality responsible for maintaining the radio caches operational capacity
  - Person from hosting locality responsible for the physical deployment and set up of cache at requested destination
- ***Cache Decision Maker: (Type I-III)***
  - Person from hosting locality responsible for deciding if an emergency or planned activity request within the region or from the state is granted
    - *Note: In some situations the radio cache manager and decision maker may be the same person*
- ***Deployable Trained Personnel: (Type I-III)***
  - Team from hosting locality that accompanies the cache through deployment, set-up, distribution, use and collection
  - Works closely with Radio Cache Manager

Minimum Capabilities & MOU Requirement Guidelines Based on Radio Cache Type

	Type I	Type II	Type III	Type IV	Type V
Number of Radios	501+ radios	301-500 radios	101-300 radios	101-200 radios	25-100 radios
Radio Interoperability Standard	• P-25 compatibility • Statewide-deployable cache equipment must be compatible with other statewide-	• P-25 compatibility • Statewide-deployable cache equipment must be compatible with other statewide-	• P-25 compatibility • Statewide-deployable cache equipment must be compatible with other statewide-	• P-25 compatibility unless exception is granted	• P-25 compatibility unless exception is granted

	deployable caches	deployable caches	deployable caches		
Additional Equipment	• 2 rechargeable and one high shelf life disposable batteries per portable radio • 1 speaker mic • 1 carrying case or clip per radio • Appropriate charging capacity for 100% of fleet within 24 hours • At least one audio interconnect (portable gateway) • Consider: Satellite communications (phone, etc.)	• 2 rechargeable and one high shelf life disposable batteries per portable radio • 1 speaker mic • 1 carrying case or clip per radio • Appropriate charging capacity for 100% of fleet within 24 hours • At least one audio interconnect (portable gateway) • Consider: Satellite communications (phone, etc.)	• 2 rechargeable (all) and one high shelf life disposable (deployable radios only) batteries per portable radio • 1 speaker mic • 1 carrying case or clip per radio • Appropriate charging capacity for 100% of fleet within 24 hours • At least one audio interconnect (portable gateway)	• 2 rechargeable (all) and one high shelf life disposable (deployable radios only) batteries per portable radio • 1 speaker mic • 1 carrying case or clip per radio • Appropriate charging capacity for 100% of fleet within 24 hours	• 2 batteries per portable radio • 1 speaker mic • 1 carrying case or clip per radio • Appropriate chargers • Extra Batteries charged with 10 year shelf life
System Requirements.	• Trunking capable based on baseline study • Blend of frequencies - at least 100 radios per band • Radio programming capability on-site • Repeaters • Power (generator)	• Trunking capable based on baseline study • Blend of frequencies - at least 75 radios per band • Radio programming capability on-site • Repeaters • Power (generator)	• Trunking capable based on baseline study • Blend of frequencies – at least one radio in each band for use with a gateway device. Plus a minimum of two radios in each band.	• Trunking capable unless exception is granted based on baseline study • Blend of frequencies – at least one radio in each band for use with a gateway device. Plus a minimum of two radios in each band.	• Trunking capable unless exception is granted based on baseline study • Blend of frequencies – at least one radio in each band for use with a gateway device. Plus a minimum of two radios in each band.

700/800 MHz	• Spectrum use defined by operating region ○ 800 MHz should be able to do both 700 and 800 MHz ○ Must have the spectrum available to support cache • Minimum 500 talk groups (upper tier radio) – system type specific • ITAC, VTAC, UTAC, in all radios • Encryption capable (no cost?)	• Spectrum use defined by operating region ○ 800 MHz should be able to do both 700 and 800 MHz ○ Must have spectrum available to support cache • Minimum 500 talk groups (upper tier radio) – system type specific • ITAC, VTAC, UTAC, in all radios • Encryption capable (no cost?)	• Spectrum use defined by operating region ○ 800 MHz should be able to do both 700 and 800 MHz ○ Must have spectrum available to support cache • Minimum 500 talk groups (upper tier radio) – system type specific • ITAC, VTAC, UTAC, in all radios • Encryption capable (no cost?)	• Spectrum use defined by operating region ○ 800 MHz should be able to do both 700 and 800 MHz ○ Must have spectrum available to support cache • Minimum 500 talk groups (upper tier radio) – system type specific • ITAC, VTAC, UTAC, in all radios • Encryption capable (no cost?)	• Spectrum use defined by operating region ○ 800 MHz should be able to do both 700 and 800 MHz ○ Must have spectrum available to support cache • Minimum 500 talk groups (upper tier radio) – system type specific • ITAC, VTAC, UTAC, in all radios • Encryption capable (no cost?)
UHF, VHF High Band, VHF Low Band	• State Interoperability Channels • National Interoperability Channels	• State Interoperability Channels • National Interoperability Channels	• State Interoperability Channels • National Interoperability Channels	• State Interoperability Channels • National Interoperability Channels	• State Interoperability Channels • National Interoperability Channels
Designated personnel (Cache owner determines level of effort of personnel. I.e. FTE vs. additional responsibility of existing staff)	• Radio cache manager • Appropriate decision maker • Deployable trained personnel	• Radio cache manager • Appropriate decision maker • Deployable trained personnel •	• Radio cache manager • Appropriate decision maker • Deployable trained personnel •	• Designated contact personnel	• Host location general support

Deployable Personnel	At least 4 designated and trained personnel are available for deployment (one team member is COML). Personnel can be multi-jurisdictional/multi-agency.	At least 4 designated and trained personnel are available for deployment (one team member is COML). Personnel can be multi-jurisdictional/multi-agency.	At least 2 designated and trained personnel are available for deployment (one team member is COML). Personnel can be multi-jurisdictional/multi-agency.	N/A	N/A
Deployment ratio	100% deployable within region; 100% deployable outside of region (with spectrum/frequency considerations)	100% deployable within region; 100% deployable outside of region (with spectrum/frequency considerations)	100% deployable within region; 50% deployable outside of region (with spectrum/frequency considerations)	100% deployable within region; 25% deployable outside of region (with spectrum/frequency considerations)	100% deployable within region; 0% deployable outside of region
Transportation Requirements	• En-route within 2 hours • Trailer or dedicated vehicle • Tower with a trailer (elevated antennae system)	• En-route within 2 hours • Trailer or dedicated vehicle	• En-route within 2 hours • Trailer or dedicated vehicle	• En-route within 2 hours	• En-route within 2 hours
Inventory Management	Yes-automated preferred	Yes-automated preferred	Yes-automated preferred	Yes	Yes
Training and Exercises	Yes	Yes	Yes	Yes	Yes
Additional requirements	Self sustaining team (people, power, food, water, shelter, etc) – 72 hours	Self sustaining team (people, power, food, water, shelter, etc) – 48 hours	N/A	N/A	N/A
Regional MOU Requirements	• Same as Type V plus MOU will also: • Commit region to 100% cache availability for	• Same as Type V plus MOU will also: • Commit region to 100% cache availability for	• Same as Type V plus MOU will also: • Commit region to 50% cache availability for	• Same as Type V plus MOU will also: • Commit region to 25% cache availability for	MOU between hosting locality and participating region. MOU will: 1) Identify host locality 2) Identify host

	state-wide deployment • Identify on call radio cache manager, appropriate decision maker, and deployable trained personnel.	state-wide deployment • Identify on call radio cache manager, appropriate decision maker, and deployable trained personnel.	state-wide deployment • Identify deployable equipment • Identify on call radio cache manager, appropriate decision maker, and deployable trained personnel.	state-wide deployment • Identify deployable equipment	organization 3) Identify and provide 24/7 contact information for cache location 4) Identify regions' operational protocols and procedures 5) Identify all first responder organizations within the region that will be provided a detailed and up to date cache inventory, regional deployment form and cache contact list.
Region to State MOU Requirements	• Same as Type IV plus MOU will also: • Agree to Virginia EOC deployment form for cache • Identify radio cache manager, appropriate decision maker, and deployable trained personnel	• Same as Type IV plus MOU will also: • Agree to Virginia EOC deployment form for cache • Identify radio cache manager, appropriate decision maker, and deployable trained personnel	• Same as Type IV plus MOU will also: • Identify 50% of cache that is statewide deployable • Agree to Virginia EOC deployment form for statewide-deployable equipment • Identify radio	• MOU will: • Identify 25% of cache that is statewide-deployable • Agree to Virginia EOC deployment form statewide-deployable equipment • Owner commits to providing the Virginia EOC a detailed cache	• No MOU required • Owner commits to providing the Virginia EOC a detailed cache inventory and cache contact list and maintaining an updated inventory list (Note: While this type is not intended for state wide

			cache manager, appropriate decision maker, and deployable trained personnel • (Note: While 50% of this type is not intended for state wide deployment, it is helpful for the Virginia EOC to maintain a central list of all radio cache resources)	inventory and cache contact list and maintaining an updated inventory list • (Note: While75% of this type is not intended for state wide deployment, it is helpful for the Virginia EOC to maintain a central list of all radio cache resources)	deployment, it is helpful for the Virginia EOC to maintain a central list of all radio cache resources)

Commonwealth Radio Cache
Policies, Procedures and Operational Protocols by Type

The following statewide policies, procedures and operational protocols are developed as a minimum requirement for each of the 5 Types of radio caches purchased with state interoperable communications grant funding. Radio cache host agencies shall understand and comply with the responsibility of radio cache ownership. Additionally, the host agency shall agree to adhere to and enforce these policies, procedures, and operational protocols.

Minimum Policies, Procedures and Operational Protocols Guidance/Requirements for Types I-V

Prior to Radio Cache Purchase	• Develop a strategy for procuring radio cache or enhancements to existing cache • Leverage interoperability baseline information (estimated completion date June 30, 2007) • Develop regional emergency and scheduled event deployment forms and procedures for internal use • Develop Inventory Control Strategy • Establish dedicated personnel as appropriate based on Type

	• Develop/update MOUs with relevant jurisdictions • Adopt and agree to enforce statewide policies, procedures, and operational protocols • Agree to standardize compatibility of all statewide-deployable caches by coordinating with peer radio cache managers throughout the Commonwealth
By the first grant reporting period	• Show progress towards the region's radio cache strategy • Inventory radios and develop an authorized cache list • Send authorized cache list and cache point of contact to regional and Virginia EOCs
Maintenance	• Fully maintain and ensure the cache is ready for deployment at all times • Exercise rechargeable batteries at least twice a year • Label authorized cache equipment appropriately • Consider and coordinate maintenance costs (replacement or upgrading) for cache equipment within the host jurisdiction or region
Operational	**Rules of Use:** All agencies shall conform to the following **rules of use** for their cache radios: • **National Incident Management System**: Use of an Incident Command System compliant with the National Incident Management System is required for use of any regional interoperability resource. • **Plain/Common language**: All Communications shall be in plain or common language. Radio codes, acronyms and abbreviations are to be avoided as they may cause confusion between agencies. Additionally, it should be understood that plain words such as "help", "assistance", "repeat" and "back-up" may have different operational meanings to different agencies. The word "Help" should be used alone unless in the context of a life-threatening situation. Requests for assistance or backup should clarify the reason for the request. • **Unit Identification**: Agency name or identifier shall precede unit identifier.
Statewide Deployment	Requests may be made for emergency incidents, training & exercises **Deployment within regions may be conducted following the regional policies and procedures developed by the cache owner(s). When in use within the region the radio cache manager or point of contact must inform the Virginia EOC of its status for Types I-III.**

	Interoperable Communications Request: Emergency (Outside of Region)
	• Responsible party within the locality must request statewide-deployable resources from the Virginia EOC providing the following information:
	  o SALTT – Size, Amount, Location, Type and Time (deployment and duration)
	  o User's agency
	  o On-scene agencies requiring interoperability
	  o Reason for request/type of event
	  o User/requestor and/or servicing dispatch contact phone number
	• It is the requesting agency's responsibility to maintain appropriate internal procedures to ensure that requests are only passed to the Virginia EOC if the request originated from, or was approved by, a person with the authority to accept fiscal responsibility for radio cache deployment costs
	• The request for deployment of a radio cache indicates acceptance of fiscal responsibility for the cost of any damaged or lost equipment
	
	Interoperable Communications Request: **Scheduled Events and Training (Outside Region)**
	• Application for deployment of the radio cache for scheduled events should be initiated no later than 30 days and no more than 120 days prior to the event
	  o Some events will require last minute requests, i.e. funerals, protests, etc.
	• The request shall be made using the proper request form directly to and be granted by the cache decision maker (Type I-III) or appropriate personnel (Type IV-V) for the host radio cache
	• The request shall be granted by the priority of the request and by date the request was received
	• The requesting jurisdiction may be responsible for pick-up and return of cache equipment
	• Inventory and inspection will occur upon return of the radios and any lost or damaged radios will be billed to the jurisdiction returning the radios
	• Any radios loaned for scheduled events will be subject to recall for a higher priority emergency incident
	• The host agency receiving a request for radio cache deployment will notify the other regional radio cache host agencies of the deployment, if applicable
	• Once a radio cache has been committed or deployed for a special event, contact shall be made to provide information regarding the number of radios deployed, the host locality name, the receiving localities name, and the name and date of the event to:
	  o Communications
	  o Firefighter, HazMat, Urban Search and Rescue
	  o Information and Planning

	o Law Enforcement • A request for tactical repeaters and interconnect devices will involve a planning meeting with the cache manager or COML to review the events communications plan and will require the deployment of Cache personnel to maintain the equipment during the event • The radio cache manager is responsible for telling the Virginia EOC about the status of their cache when in use **Radio Cache Deactivation** • The Incident Commander in conjunction with the Emergency Manager determines when the radio cache is no longer required • The Incident Commander is responsible for coordinating the return of cache • At the end of the incident, the Incident Commander or a designee is responsible for inventorying all radios returned to the cache o Before leaving the incident scene, the Incident Commander will determine if any radios have not been returned to the radio cache and note the user and/or agency to which the radio was distributed o If the missing radios can not be recovered at the incident scene, information will be provided to the appropriate point of contact for resolution • The radios will be returned to the host radio cache site within 72 hours after the incident is over **Problem reporting and Resolution** • Agencies using radio caches may report any problems with the specific radio cache to the radio cache manager (Type I-III) or appropriate personnel (Type IV-V) from which the cache was obtained • The cache manager (Type I-III) or appropriate personnel (Type IV-V) from which the cache was obtained will be responsible for ensuring effective resolution to problems that exist
Training & Exercises	• Cache resources within a jurisdiction shall be used for training and exercise activities at a minimum of twice per year • A training report shall be provided annually to the Commonwealth Interoperability Coordinator's Office • Equipment shall be maintained in a consistent operational condition and users shall be familiar with its function
Inventory Control	• A complete inventory of the caches personnel and equipment shall be conducted on an annual basis and sent to regional and Virginia EOCs • Each radio cache must be maintained in a condition available for immediate deployment within 2 hours of a request

	• It is the responsibility of the host jurisdiction(s) to maintain control over their equipment • Replacement or upgrading of cache equipment shall be coordinated by the host jurisdiction(s)
Governance	• MOUs shall be developed between host locality, region, and the state • Existing Mutual Aid MOUs will be acknowledged • All radio cache managers for Type III and above will participate on the State Interoperability Advisory Group and fulfill the responsibilities of membership of the group • Conflict resolution: The State Interoperability Executive Committee will make final recommendations to resolve conflicts

Appendix F: Interoperability Channels

The FCC has designated several frequencies as primary status for interoperable communications within VHF, UHF and 800 MHz. These frequencies can be used on a non-routine basis for interoperable communications between any local, state or federal entity. Additionally, these frequencies can be used across interstate borders with neighboring public safety jurisdictions.

VHF High Band (150 – 174 MHz) CTCSS 156.7 Hz, narrowband operation

155.7525 TX & RX	VCALL10 (Hailing Frequency)
151.1375 TX & RX	VTAC 11 (Working Frequency)
154.4525 TX & RX	VTAC 12 (Working Frequency)
158.7375 TX & RX	VTAC 13 (Working Frequency)
159.4725 TX & RX	VTAC 14 (Working Frequency)

UHF (450 – 470 MHz) CTCSS 156.7 Hz, narrowband operation

TX 458.2125MHz	RX 453.2125 MHz	UCALL40 (Hailing Frequency – Repeater)
TX 453.2125 MHz	RX 453.2125 MHz	UCALL40D (Hailing Frequency Portable to Portable)
TX 458.4625 MHz	RX 453.4625 MHz	UTAC 41 (Working Frequency)
TX 453.4625 MHz	RX 453.4625 MHz	UTAC41D (Working Frequency)
TX 458.7125 MHz	RX 453.7125 MHz	UTAC42 (Working Frequency)
TX 453.7125 MHz	RX 453.7125 MHz	UTAC42D (Working Frequency)
TX 458.8625 MHz	RX 453.8625 MHz	UTAC43 (Working Frequency)
TX 453.8625 MHz	RX 453.8625 MHz	UTAC43D (Working Frequency)

800 MHz, CTCSS 156.7 Hz, (CURRENT)

TX 821.0125 MHz	RX 866.0125 MHz	8CALL90
TX 821.0125 MHz	RX 821.0125 MHz	8CALL90D
TX 821.5125 MHz	RX 866.5125 MHz	8TAC91
TX 821.5125 MHz	RX 821.5125 MHz	8TAC91D
TX 822.0125 MHz	RX 867.0125 MHz	8TAC92
TX 822.0125 MHz	RX 822.0125 MHZ	8TAC92D
TX 822.5125 MHz	RX 867.5125 MHz	8TAC93
TX 822.5125 MHz	RX 822.5125 MHz	8TAC93D
TX 823.0125 MHz	RX 868.0125 MHz	8TAC94
TX 823.0125 MHz	RX 823.0125 MHz	8TAC94D

800 MHz, CTCSS 156.7 Hz, (AFTER FCC MANDATED REBANDING)

TX 806.0125 MHz	851.0125 MHz8CALL90	
TX 806.0125 MHz	806.0125 MHz8CALL90D	
TX 806.5125 MHz	851.5125 MHz8TAC91	
TX 806.5125 MHz	806.5125 MHz8TAC91D	
TX 807.0125 MHz	852.0125 MHz8TAC92	
TX 807.0125 MHz	RX 807.0125MHz	8TAC92D
TX 807.5125 MHz	RX 852.5125 MHz	8TAC93
TX 807.5125 MHz	RX 807.5125 MHz	8TAC93D

TX 808.0125 MHz	RX 853.0125 MHz	8TAC94
TX 808.0125 MHz	RX 808.0125MHz	8TAC94D

The Commonwealth of Virginia has designated the following VHF frequency as an interoperability frequency for law enforcement across the Commonwealth

VHF Low Band, (30 – 50 MHz) Standard Squelch

39.54 TX & RX	SIRS (State Interdepartmental Radio System)

MUTUAL AID FREQUENCIES BY DISCIPLINE

Jurisdictions are required to obtain a license in order to use the following frequencies. Questions about programming these tones into your jurisdiction's radios should be directed to the radio manager at VITA or the Virginia Department of Health Office of Emergency Services.

VHF Low Band (30 – 50 MHz) Standard Squelch

39.46 TX & RX	LAW ENFORCEMENT	LLAW1

VHF High Band (150-174 MHz) Standard Squelch

154.280 TX & RX	FIRE	VFIRE21
154.265 TX & RX	FIRE	VFIRE22
154.295 TX & RX	FIRE	VFIRE23
155.340 TX & RX	EMS	VMED28

The Commonwealth of Virginia has designated the following mutual aid frequency for use across the Commonwealth:

155.205 TX & RX	EMS	VMED[15]

More information on channel naming can be found here:
http://www.npstc.org/channelNaming.jsp

For more information on channel naming nomenclature, please visit:
http://www.npstc.org/documents/IO_0060C_20090615_Standard_Channel_Nomenclature.pdf

[15] Nomenclature is not yet finalized for this frequency

Appendix G: Additional Resources

Office of Veterans Affairs and Homeland Security Web Sites

- www.commonwealthpreparedness.virginia.gov
- www.interoperability.virginia.gov

800 MHz Rebanding

- 800 MHz Transition Administrator (http://www.800ta.org/default.asp)

Communications Spectrum

Federal agencies that manage the commercial and public communications spectrum:

- Federal Communications Commission (http://wireless.fcc.gov/publicsafety)
- National Telecommunications and Information Administration (www.ntia.doc.gov)

Federal Interoperability General Information

- AGILE Program (www.ojp.usdoj.gov)
- National Incident Management System (NIMS) training (http://training.fema.gov/EMIWEB/IS/is700.asp)
- National Law Enforcement and Corrections Technology Center (http://www.justnet.org/Pages/home.aspxhttp://www.justnet.org/Pages/home.aspx)
- SAFECOM (www.safecomprogram.gov)
- National Institute of Standards and Technology (www.nist.gov)
- SEARCH (www.search.org)
- National Public Safety Telecommunications Council (http://www.npstc.org/index.jsp)
- National Interoperability Field Operations Guide (NIFOG) (http://www.npstc.org/documents/NIFOG_1_3.pdf)

Grants Information

- Access to federal Grant Opportunities (http://www.grants.gov/)
- Department of Homeland Security (http://www.dhs.gov/xopnbiz/)
- National Institute of Justice (http://www.ojp.usdoj.gov/nij/funding/welcome.htm)
- Office of Community Oriented Policing Services (www.cops.usdoj.gov)
- Public Safety Interoperable Communications (PSIC) Grant Program (http://www.ntia.doc.gov/psic/)

Local Public Safety Organizations

- Hampton Roads Planning District Commission (http://www.hrpdc.org/)
- Metropolitan Washington Airport Authority (http://www.metwashairports.com/)
- Virginia Association of Chiefs of Police (www.vachiefs.org)
- Virginia Association of Counties (http://www.vaco.org/)
- Virginia Association of Governmental EMS Administrators (www.vagemsa.org)
- Virginia Association of Public Safety Communications Officials (http://www.virginia-apco.org/)
- Virginia Association of Volunteer Rescue Squads (http://www.vavrs.com/default2.cfm)
- Virginia Fire Chiefs Association (www.sfcav.org)
- Virginia Hospital and Healthcare Association (http://www.vhha.com/)
- Virginia Information Technologies Agency (http://www.vita.virginia.gov/)

- Virginia Municipal League (http://www.vml.org/)
- Virginia Professional Firefighters Association (http://www.vpff.org/)
- Virginia Sheriffs' Association (www.virginiasheriffs.org)
- Virginia Wireless E-911 Services Board (http://www.911.virginia.gov/index.html)

Narrowbanding

- Federal Communications Commission (http://www.fcc.gov/)

State Partners

- Virginia Department of Criminal Justice Services (http://www.dcjs.virginia.gov/)
- Virginia Department of Emergency Management (www.vaemergency.com)
- Virginia Department of Fire Programs (www.vafire.com)
- Virginia Department of Forestry (http://www.dof.virginia.gov/)
- Virginia Department of Game and Inland Fisheries (http://www.dgif.virginia.gov/)
- Virginia Department of Health (http://www.vdh.state.va.us/)
- Virginia Department of Rail and Public Transportation (http://www.drpt.virginia.gov/)
- Virginia Department of Transportation (http://www.virginiadot.org/default_flash.asp)
- Virginia National Guard (http://www.virginiaguard.com/)
- Virginia Office of the Secretary of Public Safety (http://www.publicsafety.virginia.gov/index.cfm)
- Virginia Office of the Secretary of Technology (http://www.technology.virginia.gov/)
- Virginia Port Authority (http://www.vaports.com/)
- Virginia STARS (www.publicsafety.virginia.gov/Initiatives/STARS.cfm)
- Virginia State Firefighters Association (http://www.vsfa.org/)
- Virginia State Police (www.vsp.state.va.us)

Technology and Standards Information

Standards bodies working to promote interoperable communications technology:

- Association of Public-Safety Communications Officials, International (www.apcointl.org)
- Capital Wireless Information Net (CapWIN) (www.capwin.org)
- Institute of Electrical and Electronics Engineers (www.ieee.org)
- International Telecommunication Union (www.itu.int)
- National Institute of Justice's Technology Programs (http://www.ojp.usdoj.gov/nij/topics/technology/welcome.htm)
- National Institute of Standards and Technology (www.nist.gov)
- Project 25 (www.project25.org)
- Project Mobility for Emergency and Safety Applications (MESA) (www.projectmesa.org)
- Telecommunications Industry Association (www.tiaonline.org)

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